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INVESTIGATING THE CORRELATION OF THE SHORT-TERM WITH THE LONG-TERM STOCK VALUATION IN THE EVENT OF MERGER AND ACQUISITIONS (M&A) ANNOUNCEMENT: THE CASE OF UNITED STATES OF AMERICA FROM 1985 TO 2000

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International Business

Bachelor's Thesis

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ABSTRACT OF BACHELOR'S THESIS

Author: Quan Luong-thanh

Title of thesis: Investigating the correlation of the short-term with the long-term stock valuation in the event of merger and acquisitions (M&A) announcement: the case of United States of America from 1985 to 2000

Date: **13 April 2017**

Degree: Bachelor of Science in Economics and Business Administration

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Objectives

In this research, I analyze stock prices of both the target and acquirer firms in different periods, short- and long-run, to confirm two objectives:

1) Confirm a correlated relationship between stock prices in the short- and the long-term.
2) Identify the strength of the relationship through measuring the correlation between them

Summary

The paper investigates the possibility that fluctuation of stock prices of the target and the acquiring firms in the short-run influence the valuation in the long-run. The research extracts key trends in mergers and acquisitions and data from transactions from 1985 to 2000 in the United States.

Conclusions

The findings of this research confirm the existence of the relationship between the stock prices in the short- and long-run and use correlation as the measurement method.

Key words: ***Mergers and Acquisitions; Stock market; Correlation; Regression analysis; Wealth generation***

Language: English

Grade:

TABLE OF CONTENT Page

1. INTRODUCTION

1.1 Background

Since the first merger wave began in the early twenty-first century, merger and acquisitions (M&A) have been the favorite device employed by enterprises aiming for value creation. According to Standard and Poor's (S&P) mergers and acquisitions report, 2016 saw approximately 5000 deals occurred, generating U.S $1.719 trillion in deal value in the United States (U.S) alone. Such influence on the market makes mergers and acquisitions critical elements when conducting analyses in securities.

The stock market is volatile, and the factors that can influence its movement are a mix of both external and internal elements, such as internal development, world events, and interest rates. Mergers and acquisitions have the critical role in manipulating the behavior of the stock markets. Frequently, the merger would induce a temporary decrease in the acquiring company's stock price while causing an increase in the target's. With the absence of dramatic changes in the market environment or adverse economic conditions, the merged entity is expected to experience improved stock valuation. However, not all the mergers follow this pattern. Stock price fluctuates with great intensity before, during, and after the merger, which causes uncertainties in predicting its future valuation. Furthermore, the presence of external factors, such as politics, force majeure, or regulations, could involve. However, this paper will not account such factors in the analysis or in the result interpretation.

1.2 Research problem

Existing researches on mergers and acquisitions have detected the trend that mergers tend to cluster in the period with intense stock market activity, generating the merger waves. Shleifer & Vishny (2003) denoted abnormal stock returns as the primary

reason creating merger waves. Noticing that in the 1990s, when most firms financed the mergers by stocks, they argued that the correlation between stocks as the favorite medium of merger payment and stock valuation suggested a causal relationship between them. Although their hypothesis was acknowledged and validated by different researchers, such as Jovanovic and Rousseau (2001), Panayidesand and Gong (2002), its applicability in predicting future profitability is not extensively explored. There exists limited literature study how stock prices could be utilized to forecast future gains.

1.3 Research question

According to past observations, the volume of the merger has the tendency to increase in the years that stock market prospers. Researchers in the field have examined the phenomenon extensively, resulting in the large body of existing literature. However, there exists a gap to explore in the interaction of long- and short-run effect of mergers and acquisitions on the stock market. The existing body of literature has not allocated sufficient consideration for this topic. Researchers have the tendency to assess the influence of merger in the long- and short-run separately, resulting in the lack of comprehensive investigations on the relationship between them. The objective of this paper is to analyze the relationship between mergers and wealth creation for stockholders in the short and long run. Hereby, my main research question in this study is:

How could the short-run stock market's reaction to the announcement of merger correlate with the stock valuation in the long term?

To answer the question, I will examine fluctuation in stock price in the event of a merger announcement in different time schemes, from the day of the announcement to 180 days after.

1.4 Structure of the study

This paper comprises of six sections, which will be further divided into subsections. The first part introduces some background information, definitions, and general knowledge of the topic with research questions. The following section revisits existing literature on merger and acquisition's relationship with the stock market activity. After that is the depiction of the sample selection process and the methodology used followed by the presentation of key findings. Afterward, the results are to be discussed. Finally, in the conclusion of this paper are the summary, limitations of the research, and suggestions for further investigations.

1.5 Definitions

Researchers in this topic often use the terms "merger" and "acquisition" interchangeably as synonyms; however, these terminologies do not necessarily convey the same conception. According to definition provided by the United States Securities and Exchange Commission (SEC), mergers involve the amalgamation of at least two legal entities that will cease to exist after the process to create a new organization. Although in practice, mergers in equals do not happen frequently. Hubbard and Purcell (2001) argued that the use of the term "merger" fails to convey the concept of the acquiring process comprehensively. In case a company purchases another, either in hostile or friendly manner, it is an acquisition, or frequently been addressed as a takeover. Pennings and Lee (1996) emphasized that the difference in size is the defining character of acquisition; however, the authors, in their findings, overlooked the existence of reverse acquisition – the acquirer integrates a larger or longer- established target and maintains its name for the combined firm. In an acquisition, the entity that purchases the other is the acquirer (or the bidder), and the one being acquired is known as the target firm.

Currently, there are four types of the merger. The Federal Trade Commission (FTC) classified into horizontal, vertical, product-extension, and conglomerate categories. A horizontal merger happens between competitors - for instance, Hewlett-Packard (NYSE: HWP) and Compaq (NYSE: CPQ) agree to merge, creating an $87 billion worldwide technology front-runner. A vertical merger is that of a manufacturer and a supplier, where the manufacturers acquire the entire production process by integrating the suppliers as a part of the company. Different from the other, conglomerate mergers do not have a uniform definition; however, it is widely known as mergers between entities whose businesses, products, and services are not directly related. In a product-extension merger, an entity acquires another firm manufacturing related product. Regarding the scope of the paper, this research would not venture in taking account of the types of the merger in data selection process.

1.4 The merger process

The process of integrating another firms is complicated and involves various stakeholders and procedures. Generally, a complete merger/acquisition process includes six stages: planning, target screening, negotiation, closing, integration, and post-merger evaluation. The pre-purchasing phase comprises the procedures of formulating business and acquisition strategy (planning) and searching for suitable candidates for acquiring (target screening). This step often starts with comprehensive analysis performed by the acquirer’s personnel with the consultancy of financial advisors and investment bankers. The following procedure is target screening, in which potential companies from the initial search are filtered by certain criteria, such as maximum purchase price, cultural compatibility, market segment, and profitability, etc.

to match with the acquirer's motives. This step often concludes with the first meeting with the target's management board to discuss the possibility of the transaction.

Implementation process focused on two critical stages: negotiation and integration. Before the negotiating phase, both sides of the deal perform rigorous due diligence to ensure that the acquisition would be a good fit and to eliminate potential risks during the following process. In Layman's terms, this process is to identify issues which will be used to consider the price and reduce the risk of overpaying for the acquirers. DePamphilis (2016) identified that the focus of due diligence lies on three major topics: financial, legal, and commercial. Other factors such as management, tax, operations, and information technology (IT), etc. are also included in this process. Then, those topics would be discussed by both parties in the negotiation. During this process, there are risks involving the leakage of information related to the merger, such as insider trading. The personnel handling the transaction may take advantage to make a personal investment or to disclose non-public news to the others who may utilize the information to make a profit on trading, creating influence in the stock market. Such problems have been addressed by regulated by the Securities Exchange Act of 1934, by requiring all members involving in the deal to report their trading to the SEC. Despite this enactment, insider trading still possesses a considerable influence on the stock price valuation after the merger is announced (Keown & Pinkerton, 1981).

The closing stage includes signing all bilateral agreements, contracts, and meeting regulatory approvals, as well as finalizing the value of purchase and sale. In the integrating process, DePamphilis (2016) highlighted four most critical factors that affects post-merger perfomance, which are culture, employee retention, cash-flow requirement satisfaction, and communications plan. However, DePamphilis' analysis did not take account of the speed of integration as a vital factor, which is his fatal drawback. Angwin (2004) analyzed the data from 232 corporate acquisitions and concluded that there is a

correlation between merger's success and its speed in the integration process. Then, an after-acquisition evaluation is carried to calculate the success, in terms of actual to planned performance, of the transaction.

2. LITERATURE REVIEW:

2.1 Relevant theories & approaches to the topic

After five waves of merger emerging, it is recorded that the merging activity coincides to increase in the years in which the stock market thrives (Jovanovic and Rousseau, 2001:2). Although the concept of "merger wave" is widely acknowledged by renowned researchers, no consensus was forged in on what drives them. Hence, there exist two dominant ideologies amongst the researchers: the neoclassical (Harford, 2005; Mitchell & Mulherin, 1996) and the behavioral theory (Jovanovic and Rousseau, 2001). The neoclassical theory addresses industry shocks, such as regulations and technological changes, as the trigger of takeovers. Gugler et al. (2006) studied extensively on two most recent neoclassical theories, the q-theory and the industry shocks, and revealed some underlying assumptions researchers made, which are mergers are to maximize shareholders' wealth and the market is efficient. However, the main drawback of this theory is that it was based on the observation that the merger waves happen as a reaction to the environmental business factors but not the influence of changes in stock market activity. In addition, researchers in favor of neoclassical theory do not align themselves with the proposition that the stock market adjusts itself automatically to the merger announcement (Loughran and Vijh, 1997). The behavioral theorists, on the opposite, argue that stock market valuations are correlated with the merger volume and value. Empirical researches conducted by Rhodes-Kropf et al. (2005), Jovanovic and Rousseau (2001) have concluded that aggregate merger waves appear when market valuations, as reflected in the changes in stock price, are accurate interpretations of the current economic condition of both the target and the acquirer. The

behavioral theory explains merger waves more accurate since it accounts the bilateral relationship between stock price fluctuation and the merger activity as its premise, while neoclassical theorists refuse to concur.

In designing a study that depicts the liaison between two major, well-researched topics, stock market and mergers, it is essential to adopt fundamental assumptions and theories relating to the topics into consideration. In the field of stock market, the market efficiency theory justifies the reason behind changes in stock valuation over time. Introduced by Fama (1970), the theory has been confirmed by other empirical researches for its integrity and practicability in several aspects. However, Malkiel (2003) challenged the primary idea that the market efficiency theorists uphold: information is fully incorporated into the prices of stock. He argued that the theory loses its dominance amongst both academic and practical grounds since 'stock prices are at least partially predictable' (Malkiel, 2003:4). Timmermann & Granger (2004), through their empirical research, criticized the theory's incapability to generate accurate forecast. However, although various recent researchers have revaluated the prominence of this theory and portrayed its weaknesses in some aspects, none of them could abandon the theory, as Malkiel (2003) noted that his research 'will not be an abandonment of the belief of many in the profession that the stock market is remarkably efficient in its utilization of information' (p.34). Therefore, the market efficiency theory is still considered as the primary concept amongst researchers studying stock price fluctuation.

In the practical aspect, researchers approach this topic through two familiar method: the stock-market and the accounting approach. Accounting method focused on investigating growth and return variables. Researchers following the accounting method collect pre- and post-merger data from financial statements, annual reports, tax release etc. then extract key financial indicators to analyze the impacts. Bild et al. (2002) criticized that accounting data fails to predict future performance since it only recounts

historic data. However, the majority favors the efficiency of the stock-market method. Event study method is the most favorite method amongst researchers whom favor behavioral theories in order to measure the influence of the merger announcement on stock over time.

2.2 Market's reaction to the announcement of merger

In the event of a merger announcement to the public, the stock market reacts accordingly. Several researchers believe that the high volume of merger announcement is a good indicator of foreseeable profitability. Multiple studies have focused on the hypothesis that the publication of takeover deal will create a short-term surge in the bidder and target's stock price. Utilizing event study methodology, Rani et al. (2013) determined that, through the empirical results of 623 acquisitions in India from 2003 to 2008, shareholders of the bidder firm experienced an average return of 9.6% on the announcement day. According to their research, the surge increased significantly in the event window of two, three, and five days before and after the announcement day. Similarly, Andrade et al. (2001) reported that in the event window of three days, the average abnormal return is 16% for the target company. Those results are consistent with the pioneer findings of Nelson (1959), Eckbo (1981), and Asquist (1983). Jovanovic and Rousseau (2001) reasoned that the high frequency of merger signals the prosperity of the business environment, which allows the stock price to boom; and vice versa, the growth of the stock market encourages more M&A deals to emerge. One major drawback was that in this study, the authors concluded their hypothesis by interpreting Nelson's data (1959), which raises the question about the ingenuity and accuracy. In addition, there was an insufficiency of related studies that support their conclusion. However, through empirical and historical data, researchers noticed that there is a correlation between stock price and numbers of mergers in the short run. One plausible suggestion for the cause of the short-term surge in stock price is over-valuation (Shleifer

& Vishny, 2003). Rosen (2006) coined the correlation as the “merger momentum.” He tested and confirmed the hypothesis that merger momentum is associated with over-optimism when the bidder uses stocks to finance the deal. Initially, Rosen’s theory of merger momentum is back up by Nelson’s (1959), in which he concluded that mergers have the tendency to cluster in periods of high stock valuations. In the stockholders’ perspective, mergers and acquisitions are to generate profits, since researchers have validated that the announcement of merger plan would increase the current value of stock. For instance, in 1981, when the Gulf Oil Corporation (NYSE: GFCL) announced its intention to buy an oil manufacturing firm to the public, it witnessed a 5.33% increase in the stock price of its target. The surge in stock price is associated with the fact that the merger announcements are to portray the acquirer expectations of potential targets. To investigate this phenomenon, researchers approach in different dimensions. The fact that the current stock market processes information about firms and adjusts accordingly in real time requires researchers to employ a methodology that could provide insights into how events influence stock prices. Among various methods, Zollo and Meier (2008), in reviewing the existing literature body of mergers and acquisitions, concluded that event study is the most favorite.

2.3 Gains from the merger in the short- and long-run

The change in stock price after the announcement signals for foreseeable profit. Researchers studied insights collected from the takeover, and through empirical analysis, they validated that target firm’s stockholders benefit most from the merger. Receiving significant excess returns[1] in the short run, they are the primary beneficiaries of the process of merging. Jarrell et al. (1988) affirmed that ‘shareholders of target companies definitely gain from mergers and tender’ (p.54) after reviewing the results of

[1] Excess returns is achieved by subtracting of the riskless rate from the actual rate achieved.

663 tender offers made from 1962 to 1985. They disclosed that the acquisition premium[2] paid to the target firm's shareholders increased significantly from 19% in the 1960s to 30% in between 1980 and 1985. Other researchers also concluded with the synonymous results (Jensen and Ruback, 1983; Lehn and Poulsen, 1987), despite relying on different data and testing methods. Asquith et al. (1983) identified that company size disproportion between the bidder and the target resulted in less return for both entities. Although differences in target firm's size, the method of payment, and type of acquisition affect the amount of premium (Moeller et al., 2004), target company's stockholders are undisputed winners. However, researchers could not achieve consensus on the source of gains. The common grounds, notably presented by Jensen and Ruback (1983), Lehn and Poulsen (1987), and Jarrell et al. (1988), were a reduction in costs, advancement in technology, and efficient management (synergy). Jarrell et al. (1988) proposed four different theories in favor of the theory, which are over-focus on short-term results, undervalued targets, tax effect, and wealth redistribution of bondholder theories, then rejected all by presenting its inconsistency with data collected and conflicting results.

Regarding mergers and acquisitions' post-merger performance, existing researchers focused excessively on the short-term effect since it demands less effort and has a shorter investigating time scheme. Furthermore, studies on the short-term performance of mergers provide more immediate and straightforward results, expediting the learning process in this field. However, there is a need to expand the scope of research to long-term effect likewise. The limited number of existing literature on the long-run effect emphasized on studying the importance of payment method, performance measurement, etc. Prior researchers argued that M&A do not benefit its shareholder based on the negative abnormal return in the long-run (Asquisth, 1983; Jensen & Ruback, 1983). However, the major weakness of these studies is that they

[2] Acquisition premium is the difference between the estimated real value of the acquired company before the acquisition and the actual price paid to obtain it.

overlooked several determining factors, for instance, firm size effect[3]. Moeller et al. (2004) reported that small-sized companies have significantly better return than their counterpart does when publicizing the merger. By comparing abnormal return, they calculated that small firms exceed larger ones by 2.24% in return. They interpreted that larger firms have higher tendency to be over-confident, while their smaller counterparts acquire market power and economy of scale with precision. Gorton et al. (2009) agreed with Moeller et al. (2004) 's findings and argued that the complexity of the structure of larger organizations hinders synergy in the combined firm, which provides smaller companies better positions after merging. Several authors believe that the size difference restricts businesses from exploiting the synergy effectively when merging. Agrawal et al. (1992) reported a "statistically significant wealth loss" in a five-year window of 10% after the merger's conclusion. However, their result may not preserve its value in practice today since there have been considerable changes in the mechanism of the stock market. Among the body of literature of stock price performance in the long run, results are inconsistent from one to another, which encourages further examination and research. In addition, there is demand for researchers concentrating on liaison between long- and short-run effects of mergers to discover the interconnection between them, which could be utilized for profitability prediction.

2.4 Short-term wealth effect's utilization

The purpose of this paper is to determine whether there is a connection between merger effect on stock price in the short and the long run. Existing articles focus on merger's performance separately in two different time schemes and do not allocate sufficient attention to the correlation between them. Several studies on the short-term wealth effect share synonymous results indicating that merger announcement is the

[3] A theory indicates that firms with smaller market value could outperform companies with larger market value.

reason explaining the surge in stock price. According to the efficient market hypothesis, the stock price reflects a multiplicity of information for all participants in the deal. With the announcement of the merger, a significant amount of information about the target firm is made available to the public, which could be used to test the reaction of the stock market to a merger announcement. Furthermore, it also represents the discounted value of the future stream of profit. Although not explicitly stated, previous researchers studying the performance of the merger, both in the short and long term, suggest that the stock market's reaction to announcement could help to predict post-acquisitions profitability. Rani et al. (2013) believed that the effect of the merger announcement could be a premise indicating future profitability. However, there are converse beliefs among researchers that mergers only prosper in the short run. Rani et al. (2013) agreed with the counter argument and validated its existence with empirical results. They hypothesized that the stock price in the long-run shares a synchronized movement with its counterpart near the announcement day. This hypothesis has not been confirmed by other researchers. This paper is to take the initiative step in researching the topic by examining the correlation between short- and long-term stock price value.

2.5 The fifth wave of merger and acquisition's characteristics affecting stock price

The fifth wave of merger and acquisition was associated with the financial markets prosperity, globalization, and technological advancement. Martynova & Renneboog (2008) documented all major literature relating to the fifth merger wave. They presented that the fifth wave's most favorite and most frequent method of payment, stock financing, was the influential factor that raises the value of stock, making the target and the acquirer's stocks more valuable, especially in the telecommunications, media, and technology (TMT) industry. According to the statistics provided by Institute for Mergers, Acquisitions, and Alliances (IMAA), five of the ten largest mergers from 1990 to 2000 happened in the TMT industry. The year 2000

observed the announcement of the all-time-high $165 billion Time Warner - AOL merger. However, after a period of prosperity in the TMT mergers, there was a halt in the sector. It started with the collapse of the information technology bubble, or commonly known as the “dot-com bubble’, followed by the earnings and financing problems of the telecoms.

2.6 Summary

Existing literature has covered many issues of the topic. Researchers examining the relationship of stock price valuation at different event windows in the event of merger announcement have approached the issues through various aspects and by several methods. Consequently, there are arguments and conflicting results among the researchers. Although the past researchers have contributed significantly to the general knowledge on the field, there are still gaps for new discovery, which allows this paper to contribute its value to topic. The main contributions of this thesis to the existing body of literature are as follows. The thesis investigates the correlation of stock price values of variegated industries in different times. In addition, this study employs empirical data, the stock price of the target and the acquirer from 1985 to 2000. For these reasons, this research is inspired to take the initiative in covering the gaps in the existing literature.

3. DATA & METHODOLOGY

The research is designed to examine the correlation between stock price valuation in the short and the long run after the merger publication. The following section describes this paper's chosen data and methodology with the considerations and arguments for the choices made. The section starts by describing the data chosen for examination and the selection process, then followed by presenting the method used in the paper and how it aligns with this paper's research objective.

3.1 Data & Sample collection

The study uses secondary data retrieved from Thomson Financial Securities Data Corporation (SDC) Mergers and Acquisitions database. The SDC database provides coverage of U.S mergers and acquisition landscape starting from January 1st, 1979. The data retrieved for this thesis include the following details: name of the target and acquirer company; their respective industries; stock price valuation at different stages: the announcement day, one day after, 7 days (a week), 28 days (four weeks), 60 days, 90 days, and 180 days after the announcement; the deal value in U.S million dollars; and the day of announcement. Criteria applied to the data selecting process were as follows: 1) Deals are completed; 2) Deals are stock acquisitions, acquisitions of the majority or remaining interest (stock), and mergers (stock or assets); 3) The announcement day is between 1985 and 2000 (01.01.1985 – 31.12.2000); 4) The transactions must occur domestically, in the U.S; 5) After the acquisition, at least 90% of the target stock must be acquired. The final sample comprises of 1223 transactions meeting the above requirements with the total value of approximately U.S $1.9 trillion. The rationale for choosing the period of 1985-2000 as a requirement is that this period witnessed two waves of merger, the fourth and the fifth. Different from the other waves, the fourth and the fifth wave characterized themselves with an unprecedented high

volume of firms using stock to finance the merger. Shleifer and Vishny (2003) reported that the volume of acquisitions in which stock was used as payment accounts for 45.6% of the total in the 1980s, and 70.9% in the 1990s. Taking account of the market efficiency theory, it is logical to use this specified period as the timeline for examining stock price valuation.

The samples collected from the SDC database comprise of 1223 transactions occurred in the U.S, from 1985 to 2000. The accuracy and comprehensiveness of the sample collected from SDC database assure the integrity of the information derived from it. The sample size is adequate to be able to generalize and make recommendations based on the findings. The size characteristics (mean, standard error, median, deviation, and variance) of the deal value is presented in Table 1.

Table 1: Size characteristics of mergers and acquisitions' value from 1985 to 2000.

Value of Transaction ($mil)	
Mean	1524.39
Standard Error	223.88
Median	106.70
Mode	102.00
Standard Deviation	7829.47
Sample Variance	61300566.33

Figure 1 visualizes the annual number of transactions with aggregate values, and average values of all samples collected. The graph reveals that despite the plummet in the volume of acquisitions starting from 1988 and reaching its nadir in 1992, the value of transaction increased gradually and experienced a significant surge in the last three

years - 1998, 1999, and 2000. Remarkably, 1998 observed an exponential surge in the value of mergers, approximately 4.2 times larger than the former year's figure. Table 3 provides 10 largest transactions happened from 1985 to 2000. Closer inspection of the table presents that the combined value worth U.S $ 656,164 million, accounted for 35.2% of the total value of all transactions in the period. In addition, although the majority of the largest mergers is associated with the TMT, they only accounted for 7% of the total number of transactions, while commercial bank mergers have the highest proportion of 30% with a modest figure of $184,193 million in deal value.

Figure 1: The value of transactions, in millions of U.S dollar, and the number of transactions from 1985 to 2000

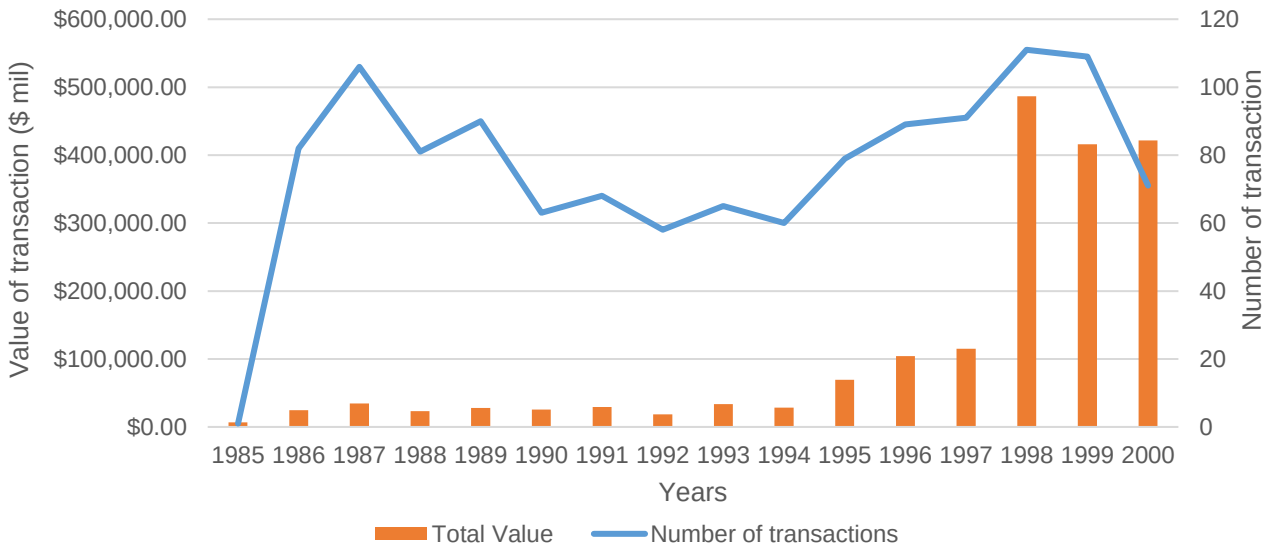

Table 2: Proportion of the industry of merger and acquisition from 1985 to 2000

Target firm Industry	**%**	**Acquirer firm Industry**	**%**
Commercial Banks, Bank Holding Companies	20%	Commercial Banks, Bank Holding Companies	30%

Savings and Loans, Mutual Savings Banks	15%	Electric, Gas, and Water Distribution	6%
Electric, Gas, and Water Distribution	6%	Savings and Loans, Mutual Savings Banks	6%
Business Services	4%	Measuring, Medical, Photo Equipment; Clocks	4%
Measuring, Medical, Photo Equipment; Clocks	4%	Telecommunications	4%
Investment & Commodity Firms, Dealers, Exchanges	3%	Business Services	3%
Others	47%	Others	46%

Table 3: Top 10 largest mergers and acquisitions observed from 1985 to 2000

Date Announced	**Target Name**	**Acquirer Name**	**Value of Trans. (million US $)**
1/10/2000	Time Warner	America Online Inc.	$164,746.86
11/4/1999	Warner-Lambert Co.	Pfizer Inc.	$89,167.72
12/1/1998	Mobil Corp.	Exxon Corp.	$78,945.79
4/6/1998	Citicorp.	Travelers Group Inc.	$72,558.18
5/11/1998	Ameritech Corp.	SBC Communications Inc.	$62,592.54
6/14/1999	US WEST Inc.	Qwest Commun Intl Inc.	$46,307.03
6/24/1998	Tele-Communications Inc.	AT&T Corp.	$33,349.32
7/28/1998	GTE Corp.	Bell Atlantic Corp.	$53,414.58
4/22/1999	MediaOne Group Inc.	AT&T Corp.	$19,210.60
10/16/2000	Texaco Inc.	Chevron Corp.	$35,872.30

3.2 Methodology

The initial stage of this research is to review related, existing literature on mergers and acquisitions' strategy, motives, financing methods, and its connection with the stock market. The aim of this procedure is to gain familiarity with the existing knowledge about the link between stock price and merger. Furthermore, reviewing different academic articles on this topic is to help the data selection process and its relevant parameters.

The second stage is to perform an empirical analysis on the secondary data retrieved from the SDC database. In this papers, the chosen method is multiple regression, which would be employed to learn how stock price fluctuations in the short-term correlate with its long-term counterpart. The majority of articles studying the effects of the merger announcement on stock prices favors the use of the event study method because of its effectiveness in explaining the correlation between them (Shaheen, 2006); however, the multiple regression method convinces to be more suitable in consideration of the scale and depth of this research. Multiple regression technique possesses certain advantages, such as its capability to easily interpretable statistical results for predictions, calibrations, and optimizations while requiring an only modest population in comparison with others method's requirements. Regression analysis method answers the following questions: Which variable matter most? Which are insignificant? How do those variables interact with each other? Moreover, most importantly, how reliable these variables are? The data will be inputted into Microsoft's Excel software for analysis. The variables included are: 1) Value of the transaction; 2) Target company's stock price at the announcement, a day after, a week (07 days), four weeks (28 days), 60 days, 90 days, and 180 days after the announcement; 3) Acquirer company's stock price with the same timeline as the target's. The stock price 180 days after the announcement would be assigned as dependent variable while the remaining prices at other points of time are independent. This rule is applied to both the target and the acquirer's stock price. So,

there would be two investigations, one for the target firm and the other for the acquirer. The regression model for this research is present below:

$$\gamma_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \beta_3 x_{i3} + \beta_4 x_{i4} + \beta_5 x_{i5} + \beta_6 x_{i6}$$

where

γ_i is the dependent variable representing the stock price 180 days after the announcement

β_0 is the intercept

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ are the beta coefficients for $x_{i1}, x_{i2}, x_{i3}, x_{i4}, x_{i5}, x_{i6}$ respectively

x_{i1} is the independent variable, representing the stock price at the announcement day

x_{i2} is the independent variable, representing the stock price one day after

x_{i3} is the independent variable, representing the stock price one week (07 days) after

x_{i4} is the independent variable, representing the stock price four weeks (28 days) after

x_{i5} is the independent variable, representing the stock price 60 days after

x_{i6} is the independent variable, representing the stock price 90 days after

3.2.1 General drawbacks of the model

Although multiple regression demonstrates its effectiveness in analyzing the relationship between variables, it also has some limitations in interpreting the results. The major limitation is that multiple regression is restrained in ascertaining relationships between variables, but not concluding the underlying causal interactions. The possibility that the independent and dependent variables may share a cause-effect relationship, for

instance, an involuntary increase or decrease in the stock price could be a consequence of some phenomena like the January effect[4] or the weekend effect[5], is high. The multiple regression technique is unable to justify the existence of such relationship with its linear-testing mechanism. Furthermore, there are several assumptions that researchers should account for when employing regression as the method (Osborne & Waters, 2002), which are: 1) Variables are normally distributed; 2) The relationship between the independent and dependent variables is linear; 3) Reliability of the variables; 4) Homoscedasticity[6].

3.2.2 Multicollinearity

In addition, with six independent variables, the regression model of this research may experience the multicollinearity problem. Multicollinearity occurs when two or more variables in the model are significantly correlated. The existence of multicollinearity inflates the estimated variances, which makes it difficult to calculate the regression coefficients. In addition, inflated variances hinder the integrity of the regression analysis, interpretation, and conclusion. However, to fully understand to what extend that multicollinearity present problems to the regression, Mason and Perreault (1991) documented the scenarios under which multicollinearity hinders the integrity of the multiple regression model. They presented that multicollinearity leads to inaccurate estimates of coefficients and standard errors, although the overall prediction is not hampered. Therefore, it is a necessary to develop a procedure to quarantine the risks. In case multicollinearity problem presents, the procedure is to isolate and eliminate one of the two variables that are highly correlated or to increase the sample size to reduce

[4] The phenomenon in which stock returns on Fridays of the previous week are often significantly higher than those of the following Mondays.
[5] The January effect is a seasonal increase in stock prices during the month of January (definition provided from Investopedia.com)
[6] Homoscedasticity describes a situation in which the error term is the same across all values of the independent variables. (Available from: http://www.statisticssolutions.com/homoscedasticity)

the correlation. To address the risk of multicollinearity, a test is employed to detect the presence of multicollinearity. Many authors adopt variance inflation factors (VIF) as the detecting method, which is explained as follow:

$$VIF_j = \frac{1}{1 - {R_j}^2}$$

where ${R_j}^2$ is the R^2-value obtained by regressing the j^{th} predictor on the remaining predictors. If the $VIF_j \geq 10$, then as rule of thumb, the existence of multicollinearity confirmed and needed to be addressed. Mason and Perreault (1991) suggest that increasing the R^2 value and the sample size could mitigate the problems caused by multicollinearity. However, it is not practical on this case because of the restricted accessibility to the data. Another possible solution is to eliminate highly-correlated variables. This procedure starts with a series of correlation test between each pair of variable to identify which is highly correlated. With six independent variables, the total of fifteen tests are to be examined. However, there exists a stream of thoughts advocate researchers to ignore the problem since it is still debated whether multicollinearity could affect the outcomes. Grewal et al. (2004) are skeptical of this premise, hence they designed a research based on Mason's and Perreault's (1991) original study to explore further on the consequences of multicollinearity.

Furthermore, since stock prices tend to move together, the presence of multicollinearity is expected. The objective of this research is to confirm the relationship between variables and to measure the strength of that relationship. Therefore, the fact that multicollinearity increases the standard error value of regression coefficients, widening the confidence intervals and increasing the likelihood of rejecting the significant test statistic is accepted. The consequences of multicollinearity are accounted in the findings. Provided that the results are consistent with existing theories and findings, the objective of this research is achieved, and the outcomes of multicollinearity is mitigated. The variables are strongly related to each other because

they are based on the same underlying construct, in which case neither one is adding much more on top of the other for good reason, and it would be impossible to separate them out ontologically for predictive purposes anyway, by manipulating the units of observation to have different values on each of the two predictor variables so that they work better as predictors.

4. FINDINGS

This part presents the results of the regression analysis. The multiple regression model was employed to examine the possibility that the stock price fluctuation in the short term could correlate with an increase or decrease in its price in the long term. In general, the analysis has confirmed a significant correlation between variables in both investigating cases, the target and the acquirer's stock price. From Table 4, the statistical results confirm a positive correlation between the independent and dependent variables with the multiple correlation coefficient of 0.97 and 0.99 for the target and the acquirer respectively. The significance of the multiple correlation coefficient indicates the strong relationship between them. In addition, the independent variables of both the target and the acquirer explain approximately 94% and 99% of the dependent variables, stock price 180 days after the announcement, according to the values of the coefficient of determination R^2. The insignificant value of the standard error of the regression suggests high accuracy of the sample.

Table 4: Multiple regression analysis results

Regression Statistics	**The target**	**The acquirer**
Multiple R	0.973962818	0.999990059
R Square	0.948603572	0.999980119

Adjusted R Square	0.948349971	0.999980021
Standard Error	5.126331564	8.110007638
Observations	1223	1223

The results of the estimated regression line reveal that in the target section, the relationship among stock price four weeks and 90 days after the announcement with the value 180 days after is positive, while the others are negative related. Synonymous investigation of the acquirer stock price indicates that only two variables, the price after one day and 90 days of the announcement, are statistically significant in explaining the relation with the stock price after 180 days. However, in a broader prospect, these independent variables do not significantly explain the variation of the dependent variable.

Table 5: Estimated regression line's coefficients and standard errors of the target and the acquirer's investigation.

	The Target		**The Acquirer**	
	Coefficients	*Standard Error*	*Coefficients*	*Standard Error*
Intercept	0.388916774	0.227307897	-1.286960564	0.310626921
At Ann Date	-0.054503709	0.053401602	-0.038801365	0.126263795
1 Day After	-0.315078116	0.103915955	0.270893196	0.15830051
1 Week After	-0.098889125	0.117376412	-0.074923716	0.128215006
4 Weeks After	1.267097762	0.04853467	-0.049281825	0.08016894
60 Days After	-0.721179917	0.059232283	-0.078377402	0.052034569
90 Days After	0.939992561	0.043080963	1.020496907	0.01999052

With the results presented in Table 6, it is noticed that both cases, the acquirer and the target, share a common attribute: variables in both cases are in a perfect positive relationship. The correlation coefficient, which is measured on the scale of -1 to +1, illustrates the strength of the relationship between variables. The value of the correlation coefficient varies, from the minimum of 0.92 to the maximum of 0.99. Strong positive correlation signifies that stock prices at different period have consistent direction with each other. Despite the similarity, these sets of result have their distinctive characteristics. It is apparent from this table that in the target case, the closer to the announcement day, the higher correlation. On the other hand, this trend is not applied to the acquirer's results. The correlation in the acquirer table maintains its consistency, with insignificant oscillation, throughout all variables, which may suggest that the influence of merger on stock prices is more constant across different periods

Table 6: Correlation between the variables in the multiple regression analysis

Panel A: The Target

	At Ann Date	1 Day After	1 Week After	4 Weeks After	60 Days After	90 Days After	180 Days After
At Ann. Date	1						
1 Day After	0.989695109	1					
1 Week After	0.988237199	0.996464279	1				
4 Weeks After	0.974458197	0.977469065	0.986351	1			
60 Days After	0.960319786	0.96960977	0.971995	0.969294	1		
90 Days After	0.937983786	0.94692107	0.948378	0.941732	0.98379	1	
180 Days After	0.926250529	0.928092632	0.939412	0.959775	0.941085	0.940808	1

Panel B: The Acquirer

	At Ann. Date	1 Day After	1 Week After	4 Weeks After	60 Days After	90 Days After	180 Days After
At Ann. Date	1						
1 Day After	0.99999963	1					
1 Week After	0.99999921	1	1				
4 Weeks After	0.99999710	0.999998	0.999998	1			
60 Days After	0.99999284	0.999994	0.999995	0.999997	1		
90 Days After	0.99997187	0.999971	0.999971	0.999973	0.999974	1	
180 Days After	0.99996516	0.999964	0.999964	0.999965	0.999965	0.99999	1

5. DISCUSSION & ANALYSIS

This paper investigates the correlation between stock price activity in the short and long period with the event of the merger announcement. To achieve the results, regression model and statistical tests, such as correlation analysis, are used to analyse a sample of 1223 acquisitions between 1985 and 2000. The focuses of the research are to confirm a correlating relationship between stock price valuation in different periods and to measure the strength of that relationship.

The results generated by the regression model has provided reliable evidence of a positive correlated interaction between stock price across the investigating periods. The regression analysis has proven its effectiveness in confirming the correlation between stock price. It has confirmed a strong positive relationship among stock price in the long period (180 days after the announcement). Significant and consistent correlation across the time suggests that the merger announcement incentive has profound effect in directing the trend of stock price. The results are consistent with the conclusion drawn by Agrawal et al. (1992), Loughran & Vijh (1997), and Rani et al. (2013). Evidently, the results have demonstrated its efficiency in analysing the

fluctuation of stock, proving that the behavioural approach on this topic is more practical that its neoclassical counterpart. In consideration on the premise that whether shareholders are benefited from the mergers, Shaheen (2006) reported that the acquiring firms do not benefit from significant abnormal returns while the target companies prosper from it, on the premise that stocks are used as the payment for the merger. This result is in line with Jarrell et al. ‘s (1988) findings, despite differences in testing method and sample selection.

Whether there was an increase or decrease in its valuation, stock prices in different window tends to move in a synonymous, consistent flow with its movement around the announcement day. Although there exists a handful of outliners in the dataset that did not suit to the common trend, however, their significances are negligible.

6. CONCLUSIONS

6.1 Main Findings

This thesis provides an overview of the interaction of merger announcement to the stock market activity. The analysis provides evidence of a uniform movement of stock valuation in the short and the long period. Regression method has confirmed the existence and presented a significant correlation between them. Therefore, it is concluded that short-term fluctuations of stock price in different have profound effect on future price valuation of both the target and the acquirer firms. The difference in the results between the target and the acquirer firms is that the consistency across time of the acquirer is better than its counterpart. However, the results derived from the analysis have not affirmed that the aforementioned relationship involves in generating wealth in the long-term. The correlation is not sufficient to arrive at such conclusion.

6.2 Implications for International Business

Starting from the 1990s, stock markets around the globe affected each other considerably when real-time interaction trading technology was introduced. A fluctuation in one major financial market will influence the other, which is both the advantage and disadvantage of internationalization. The U.S houses the New York Stock Exchange (NYSE), the worldwide leader in both the volume of trading and market capitalization. As the largest stock exchange in the U.S. and major player in the world, the NYSE manages substantial amounts of financial wealth every trading day. The fluctuation in the share prices on the NYSE affects investors' sentiment, influencing their decision the spending. With substantial deal value and the volume, mergers and acquisitions have played the denominator role since the first days of the fourth merger wave, when stock gained its popularity.

6.3 Limitations

This research has several inherent limitations. Despite the remarkable outcome of the regression analysis, the significant correlation does not prove causation. Correlation only examines the variables at a linear relationship, which may overlook or unable to explain the underlying cause-and-effect relationship of the data. In addition, in comparison with other methods to examine the relationship between variations in stock price, multiple regression deems to be considered as unsophisticated when regarding its capability to interpret the data. Furthermore, the analysis' result is valid only for the range of data used for investigation. In conducting this research, the author was unable to collect financial indicators of profitability, such as price-to-book ratio, net profit margin, etc., to use as a confirmation of the analysis' results, which is another shortcoming of the paper. This drawback exists because of the author's inaccessibility to several databases containing the data, such as Bloomberg Terminal. Due to this reason, this research does not have a measure to confirm the analysis, which bears the

risk of being unverified. Furthermore, the limited accessibility to the database restricted the scope of the research, which forces the author to narrow possible alternatives to engage. In addition, while testing the significance of variables through test statistics examination, I noticed that two explanatory variables are not significantly different from 0, which may decrease the accuracy of the results.

The most considerable shortcoming of the research is the presence of multicollinearity. Although its presence does not hinder the objective, it demotes the significance of the findings, since it inflates regression coefficients' standard error value. Another drawback of this paper locates in the data selection procedure. The data comprises of a mix of transactions from various industries, stretching from telecommunication to manufacturing. This variety could hinder the discovery of the connection between related industries, for example, aviation and oil production. The overall correlation may overlook distinctive relationships between.

6.4 Suggestions for Further Research

Future researches can expand the scope of the investigation to the sixth merger wave. As since the fifth wave, cross-border merger and acquisition have gained its prevalence and generated unprecedented transaction value. Furthermore, when choosing the period of investigation, future researchers should consider social-economic events to adjust the impacts on the analysis results. In addition, it is optimal to gather information about post-merger profitability to compare with stock valuation. Furthermore, if it is possible to enlarge the sample size, the time-series regression or auto-regressive model should be employed to tackle the varying characteristics of the stock price over time. Finally, this research contributes to the literature of mergers and acquisitions and stock market performance, thus, it could be a possible reference for future researchers when conducting their independent researches.

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